

CLAIMS

What is claimed is:

1. A method for translating between Standard Commands for Programmable Instrumentation (SCPI) protocol and .NET protocol communications, comprising:
 - when the communication is a SCPI protocol command from a client,
 - converting the SCPI protocol command to a .NET protocol command; and
 - evaluating the .NET protocol command to determine the validity of parameters sent from the client with the SCPI protocol command;
 - otherwise, when the communication is a SCPI protocol query from the client,
 - converting the SCPI protocol query to a .NET protocol query; and
 - evaluating the .NET protocol query to determine the validity of parameters sent from the client with the SCPI protocol query; and
 - calling an appropriate Application Program Interface (API) of an instrument application, wherein the communication is intended for the instrument application and wherein the API is responsive to method calls in the .NET protocol.

2. The method as recited in claim 1, further comprising:

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before the method step converting the SCPI protocol command to the .NET protocol command, placing the SCPI protocol command into .NET stream format; and

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before the method step converting the SCPI protocol query to the .NET protocol query, placing the SCPI protocol command into .NET stream format.

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3. The method as recited in claim 1, further comprising:

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when the query or the command is communication requiring response from the instrument application,

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forming a .NET protocol response message to the communication;

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translating the .NET protocol response message to a SCPI protocol response message, wherein the SCPI protocol response message comprises contents of nodes of a SCPI hierarchical tree structure; and

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transferring the SCPI protocol response message to the client.

4. The method as recited in claim 3, further comprising:

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before the method step transferring the SCPI protocol response message to the client, converting the SCPI protocol response message to SCPI format order.

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- 2 5. The method as recited in claim 1, further comprising:
- 4 asynchronously receiving an out of band IEEE 488.1 protocol signal from
the client;
- 6 converting the out of band signal IEEE 488.1 protocol signal to a .NET
event; and
- 8 transferring the out of band signal IEEE 488.1 protocol signal to the
instrument application.
- 10 6. The method as recited in claim 1, further comprising:
- 2 when an event occurs in the instrument application,
- 4 posting a notice of event occurrence in a status module; and
- 6 asynchronously notifying the client of event occurrence.
- 2 7. The method as recited in claim 6, further comprising:
- 4 after the step asynchronously notifying the client of event occurrence,
- 6 receiving query from the client requesting detailed information
regarding the event occurrence;
- 8 forming a .NET protocol response message to the query;
- 10 translating the .NET protocol response message to a SCPI
protocol response message; and

4 before the method step converting the SCPI protocol command to the
6 .NET protocol command, placing the SCPI protocol command into .NET
stream format; and

8 before the method step converting the SCPI protocol query to the .NET
10 protocol query, placing the SCPI protocol command into .NET stream
format.

10. The computer readable memory device as recited in claim 8, the
2 instructions further comprising:

4 when the query or the command is communication requiring response
6 from the instrument application,

8 forming a .NET protocol response message to the communication;

10 translating the .NET protocol response message to a SCPI
12 protocol response message, wherein the SCPI protocol response
message comprises contents of nodes of a SCPI hieratical tree
structure; and

14 transferring the SCPI protocol response message to the client.

11. The computer readable memory device as recited in claim 10, the
2 instructions further comprising:

4 before the method step transferring the SCPI protocol response message
6 to the client, converting the SCPI protocol response message to SCPI
format order.

- 2 12. The computer readable memory device as recited in claim 8, the
instructions further comprising:
- 4 asynchronously receiving an out of band IEEE 488.1 protocol signal from
the client;
- 6 converting the out of band signal IEEE 488.1 protocol signal to a .NET
event; and
- 8 transferring the out of band signal IEEE 488.1 protocol signal to the
instrument application.
- 10 13. The computer readable memory device as recited in claim 8, the
instructions further comprising:
- 2 when an event occurs in the instrument application,
- 4 posting a notice of event occurrence in a status module; and
- 6 asynchronously notifying the client of event occurrence.
- 8 14. The computer readable memory device as recited in claim 13, the
instructions further comprising:
- 2 after the step asynchronously notifying the client of event occurrence,
- 4 receiving query from the client requesting detailed information
regarding the event occurrence;
- 6 forming a .NET protocol response message to the query;
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10 translating the .NET protocol response message to a SCPI
protocol response message; and

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transferring the SCPI protocol response message to the client.

15. A system, comprising:

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a parser module configured to receive a Standard Commands for
Programmable Instrumentation (SCPI) protocol communication from a
client and to translate the SCPI protocol communication into a .NET
protocol communication; and

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an evaluator module, configured to evaluate the .NET protocol
communication to determine the validity of parameters sent from the
client with the SCPI protocol communication.

16. The system as recited in claim 15, further comprising:

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a first format converter module configured to convert the SCPI protocol
communication into a .NET stream format.

17. The system as recited in claim 15, further comprising:

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a first translator module configured to translate a .NET response from the
instrument application to a SCPI protocol response.

18. The system as recited in claim 17, further comprising:

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a second format converter module configured to convert the SCPI
protocol response in a .NET stream format into SCPI format order.

19. The system as recited in claim 15, further comprising:

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a third format converter module configured to convert an out of band
4 IEEE 488.1 signal into a .NET signal.

20. The system as recited in claim 15, further comprising:

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a status module comprising an event message queue and a status register
4 wherein the message queue and the status register store event occurrence
information from the instrument application;

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an event translator module configured to receive notice of event
8 occurrence from the status module and to translate that notice into a SCPI
status notification.